

# Postgraduate Certificate

## Advances in Antimicrobials



## Postgraduate Certificate Advances in Antimicrobials

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicine/postgraduate-certificate/advances-antimicrobials](http://www.techtitute.com/us/medicine/postgraduate-certificate/advances-antimicrobials)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*

01

# Introduction

Infections by microorganisms such as bacteria, fungi, parasites and viruses are a major cause of mortality in resource-poor countries.



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*This Postgraduate Certificate in Advances in Antimicrobials: will generate a sense of security in the performance of your profession, which will help you to grow personally and professionally"*

Hence the importance of knowing the main advances in antimicrobials, which help to eliminate the growth of these microorganisms. Thus, during this Postgraduate Certificate, students will be able to learn about the latest developments in this field in order to develop their work in a more effective way

Effective treatment with antimicrobials can mean the difference between cure and death for the patient who is affected by an infection. However, their abuse leads to microorganisms becoming resistant. Although the effectiveness of research, as highlighted by the World Health Organization (WHO), has led to major advances in tackling antimicrobial resistance

This syllabus will serve, precisely, to learn about the latest advances in the field and will provide healthcare professionals with the necessary techniques to update their knowledge

Excessive supply of antibiotics can sometimes produce more problems than benefits. Therefore, it is important to be especially careful in the case of pregnant women. Thus, this Postgraduate Certificate places special emphasis on the safety of its use according to the latest scientific findings

In addition, the latest advances in the use of these drugs for the treatment of different pathologies such as renal and hepatic insufficiency will also be presented. This makes this training program one of the most complete on the market

This **Postgraduate Certificate in Advances in Antimicrobials**: the most complete and up-to-date scientific program on the market. The most outstanding features of the University Course are:

- ♦ The development of more than 75 case studies presented by experts in Advances in Antimicrobials: The graphic, schematic, and eminently practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ The latest news on Advances in Antimicrobials:
- ♦ The content of practical exercises where the self-evaluation process can be carried out to improve learning
- ♦ Special emphasis is placed on innovative methodologies in Advances in Antimicrobials:
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*Update your knowledge through the Postgraduate Certificate in Advances in Antimicrobials"*



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*This Postgraduate Certificate may be the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in advances in antibiotic therapy, you will obtain a Postgraduate Certificate issued by TECH Global University"*

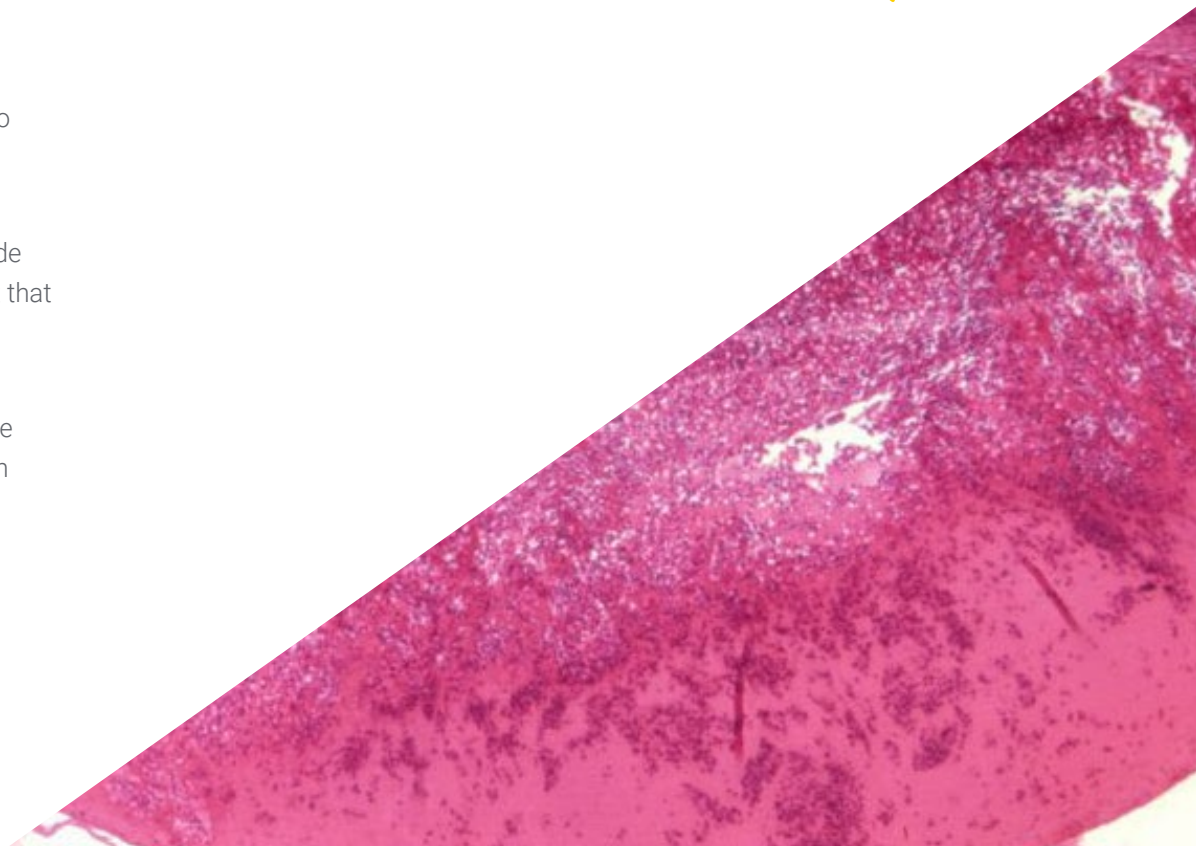
*Increase your decision-making confidence by updating your knowledge through this Postgraduate Certificate.*

*Take the opportunity to learn about the latest advances in Antimicrobials: therapy and improve the training of your students.*

Its teaching staff includes professionals belonging to the field of antimicrobials, who contribute their work experience to this training, in addition to renowned specialists belonging to reference societies and prestigious universities

The multimedia content developed with the latest educational technology will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training program to train in real situations

This program's design is based on problem-based learning, by means of which the professional must try to solve the different professional practice situations that arise during the course university. For this purpose, the professional will be assisted by an innovative interactive video system developed by recognized experts in the field of Antimicrobials: Advances and with great experience



# 02 Objectives

Overall, the main objective of this Postgraduate Certificate is the improvement of health professionals, based on the acquisition of the most updated and innovative scientific knowledge in the field of Antimicrobial Advances that will allow them to develop skills for the correct and rational use of these drugs, making their daily clinical practice a bastion of the standards of the best scientific evidence available, with a critical, innovative, multidisciplinary and integrative sense.





A microscopic view of several cells, likely bacteria or fungi, with a textured, purple and white surface. The cells are arranged in a cluster, with some showing more detail than others. The background is dark, and the cells are illuminated from the side, creating a sense of depth and texture. The image is partially obscured by a diagonal white and blue graphic element.

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*This Postgraduate Certificate is oriented to update your knowledge in Advances in Antimicrobials, with the use of the latest educational technology, to contribute with quality and safety to the decision making process with your patients"*



## General Objective

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- ♦ Guarantee the professional improvement, through the currentness, novelty and depth of the best scientific evidence on antimicrobials for the correct use of these drugs and the adequate treatment of infectious diseases with a multidisciplinary and integrative approach that facilitates the control of these pathologies



## Specific Objectives

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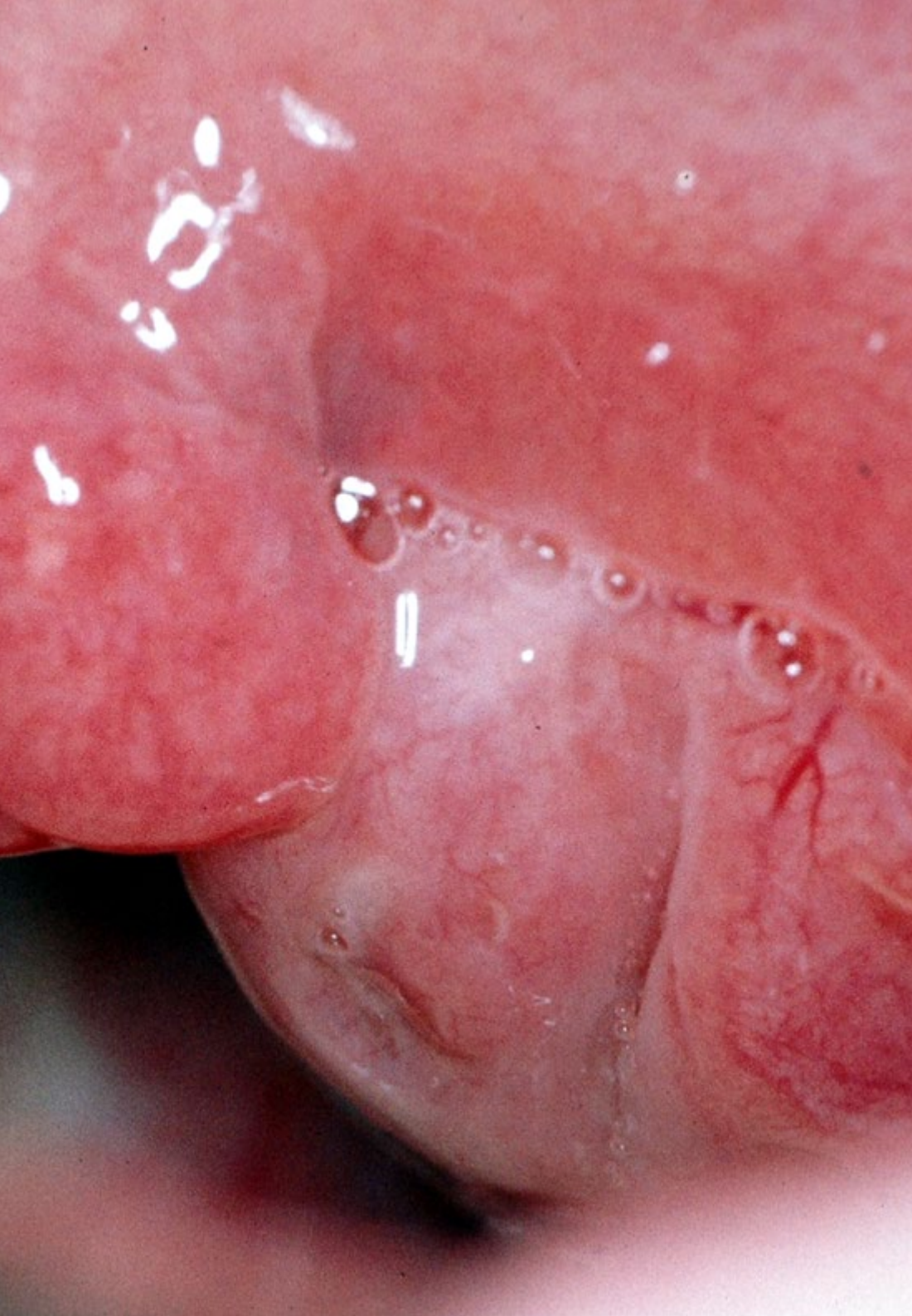
- ♦ Provide students with advanced, in-depth, up-to-date, and multidisciplinary information that allows them to comprehensively approach the health-infectious disease process, the use of antibiotics, and antibiotic resistance
- ♦ Provide training and practical/theoretical improvement that will enable a reliable clinical diagnosis supported by the efficient use of diagnostic methods to indicate an effective antimicrobial treatment
- ♦ Develop skills to implement prophylactic plans for the prevention of these pathologies
- ♦ Address the important role of microbiology and the diagnosis and control of infectious diseases
- ♦ Describe the main mechanisms of antimicrobial resistance
- ♦ Highlight the importance of rational therapeutics in the rational use of antimicrobials
- ♦ Emphasize the role of interpretative reading of an antibiogram and the identification of new resistance genotypes with clinical relevance





- ◆ Describe the most important elements of the absorption, transportation, distribution, metabolism, and excretion of antibiotics
- ◆ Address, in detail and depth, the most up-to-date scientific evidence on the mechanisms of action, adverse effects, dosage, and use of antimicrobials
- ◆ Explain the pathophysiologic and pathogenic interrelationships between antimicrobial use and the immune response
- ◆ Justify the importance of controlling the use of antimicrobials as a means of reducing antibiotic resistance
- ◆ Explain the production process of new antibiotics
- ◆ Address the crucial issue of super-resistant microbes and their relationship to antimicrobial use based on the most up-to-date concepts
- ◆ Emphasize the development of future antibiotics and other therapeutic modalities for infectious diseases
- ◆ Emphasize the future challenges of infectious diseases in decreasing infectious diseases morbidity and mortality and antimicrobial treatment

*Update your knowledge through the  
Advances in Antimicrobials program.*



03

# Course Management

This teaching program includes the participation of prestigious and renowned medical specialists, Postgraduate Certificate holders, with numerous publications, teaching experience and professional experience in numerous countries. The teaching staff is made up of a multidisciplinary team from various medical specialties, as internal medicine, pediatrics, general surgery, gynecology and obstetrics, microbiology, pathological anatomy and pharmacology, among others.







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*Learn from leading professionals, the latest advances in procedures in the field of Antimicrobial Advances”*



## Management



### Dr. Quintero Casanova, Jesús

- ♦ Degree in Medicine and Surgery from the Medical University of Havana. Cuba
- ♦ Specialist in Internal Medicine. "Héroes del Baire" Hospital
- ♦ Professional Master's Degree in Tropical Diseases and Clinical Infectious Diseases from the Pedro Kuori Institute, Havana. Cuba
- ♦ Head of the Department of Infectious Diseases of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal Medicine
- ♦ Member of the Cuban Society of Teachers
- ♦ Medical specialist in Africa (Chad) and Venezuela in (2009, 2013-15)
- ♦ Professor on the Medicine Degree and Internal Medicine Specialty at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Professor in the Master's Degree in Infectious Diseases Professional Master's Degree at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ National Research Award in Cuba, 2002
- ♦ Medical Science Teaching Award. Cuba

## Professors

### Dr. Valle Vargas, Mariano

- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Internal Medicine. "Héroes del Baire" Hospital
- ♦ Master's Degree in Health Biostatistics
- ♦ Diploma in Epidemiology
- ♦ Head of the Internal Medicine Department of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal Medicine
- ♦ Member of the Cuban Society of Teachers
- ♦ Medical specialist in Venezuela in 2009, 2007-10
- ♦ Professor on the Medicine Degree and Internal Medicine Specialty at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Medical Science Teaching Award. Cuba

### Dr. Dranguet Bouly, José Ismael

- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Internal Medicine and Intensive Therapy. "Héroes del Baire" Hospital
- ♦ Master's Degree in Infectious Diseases from the Pedro Kouri Institute of Cuba
- ♦ Head of the Internal Medicine Department of the Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Internal medicine and the Cuban Society of Intensive Therapy
- ♦ Member of the Cuban Society of Teachers
- ♦ Medical specialist in Mozambique, 2008-10
- ♦ Professor on the Medicine Degree and Internal Medicine Specialty at the Faculty of Medical Sciences of Isla de la Juventud
- ♦ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of state examining boards for the medicine degree and internal medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Medical Science Teaching Award. Cuba
- ♦ Professor at the Catholic University of Santiago de Guayaquil Ecuador, 2018

**Dr. Cantalapiedra Torres, Alejandro**

- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Pediatrician. "Héroes del Baire" Hospital
- ♦ Master's Degree in Infectious Diseases
- ♦ Diploma in Medical Teaching
- ♦ Diploma in Health Management
- ♦ Member of the Cuban Society of Pediatrics
- ♦ Professor in the Medicine Degree and Pediatrics Specialty in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Medical Specialist in Haiti in 2000-01
- ♦ Medical Specialist in Antigua and Barbuda in 2008

**Lic. Lawrence Carmenate, Araelis**

- ♦ Lic. In Microbiology from the University of Havana
- ♦ Master's Degree in Infectious Diseases
- ♦ Professor on the Medicine Degree in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of the Cuban Society of Microbiology
- ♦ Member of the Associations of Teachers
- ♦ Worked in Caracas, Venezuela from 2012 to 2014
- ♦ Participated in national and international Microbiology events in Cuba and Venezuela

**Dr. Luís Dávila, Heenry**

- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Specialist in Gynecology and Obstetrics at Héroes del Baire Hospital. Cuba
- ♦ Professional Master's Degree in Comprehensive Care for Women
- ♦ Head of the Neck Pathology Service at Héroes del Baire Hospital
- ♦ Member of the Cuban Society of Gynecology and Obstetrics
- ♦ Member of the Cuban Society of Teachers
- ♦ Medical specialist in Guatemala, 2010-12
- ♦ Professor on the Medicine Degree in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of state examining boards medicine
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ National research award. Cuba
- ♦ Medical Science Teaching Award. Cuba

**Dr. Jiménez Valdés, Erlivan**

- ♦ Degree in Medicine and Surgery from the University of Havana. Cuba
- ♦ Pediatrician. "Héroes del Baire" Hospital
- ♦ Master's Degree in comprehensive childcare
- ♦ Member of the Cuban Society of Pediatrics
- ♦ Professor in the Medicine Degree and Pediatrics Specialty in the Faculty of Medical Sciences in Isla de la Juventud
- ♦ Member of tribunals for national scientific events. Cuba
- ♦ Medical specialist in Venezuela in 2017



**Dr. Batista Valladares, Adrián**

- ◆ Degree in Medicine and Surgery from the University of Havana. Cuba
- ◆ Specialist in Family and Community Medicine
- ◆ Master's Degree in Clinical Infectology
- ◆ Diploma in Diagnostic Ultrasound
- ◆ Diploma in Healthcare Management
- ◆ Head of Senior Citizen Services in Isla de la Juventud. Cuba
- ◆ Member of the Cuban Society of Family Medicine
- ◆ Professor of the medicine and family medicine degrees at the Faculty of Medical Sciences in Isla de la Juventud
- ◆ Professor of the Professional Master's Degree in Infectious Diseases in the Faculty of Medical Sciences in Isla de la Juventud
- ◆ Member of state examining boards for the medicine degree and family medicine
- ◆ Member of tribunals for national scientific events. Cuba

**Lic. González Fiallo, Sayli**

- ◆ Degree in Hygiene and Epidemiology
- ◆ Master's Degree in Epidemiology
- ◆ Professor of the Faculty of Medical Sciences in Isla de la Juventud
- ◆ Director of the Health Analysis, Biostatistics, and Surveillance Unit of the Municipal Health Directorate. Isla de la Juventud

# 04

# Structure and Content

The teaching program has been created by a group of professors and medical professionals from various medical specialties, with extensive medical, research and teaching experience in several countries in Europe, Africa, Central and South America, interested in integrating the latest and most current scientific knowledge of antimicrobials to ensure training and professional development to improve the daily clinical practice of professionals who care for patients or populations with infectious diseases.





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*This Postgraduate Certificate in Advances in Antimicrobials: the most complete and up-to-date scientific program on the market”*

## Module 1. Antimicrobials: General Aspects

- 1.1. History and the Development of Antimicrobials
  - 1.1.1. Emergence and Development of Antimicrobial Treatments
  - 1.1.2. Impact on Morbidity and Mortality of Infectious Diseases
- 1.2. Classifications: Practical and Future Use of Each Class
  - 1.2.1. Chemical Classification
  - 1.2.2. Classification by Antimicrobial Action
  - 1.2.3. Classification According to their Antimicrobial Spectrum
- 1.3. Update on the Mechanisms of Action of Antimicrobials
  - 1.3.1. Main Antimicrobial Mechanisms of Action
- 1.4. General and Latest Elements of Antimicrobial Treatments
  - 1.4.1. General and Recent Concepts in the Use of Antimicrobials
  - 1.4.2. New Developments in the Use of Antimicrobial Combinations
  - 1.4.3. Interactions between Antimicrobials
- 1.5. Antibiotic Prophylaxis: Its Current Role in Surgical Morbidity and Mortality
  - 1.5.1. Concept
  - 1.5.2. Objectives
  - 1.5.3. Types of Antibiotic Prophylaxis
  - 1.5.4. Perioperative Antibiotic Prophylaxis
- 1.6. Phased Antibiotic Treatment: Current Criteria
  - 1.6.1. Concept
  - 1.6.2. Principles
  - 1.6.3. Objectives
- 1.7. Latest Concepts in the Use of Antibiotics in Renal Failure
  - 1.7.1. Renal Excretion of Antibiotics
  - 1.7.2. Renal Toxicity of Antibiotics
  - 1.7.3. Dose Modification in Renal Failure
- 1.8. Antibiotics and the Blood-Brain Barrier: Recent Findings



- 1.8.1. The Passage of Antibiotics through the Blood-Brain Barrier
- 1.8.2. Antibiotics in Central Nervous System Infections
- 1.9. Antibiotics and Liver Failure: Progress and Future Challenges
  - 1.9.1. Hepatic Metabolism of Antibiotics
  - 1.9.2. Hepatic Toxicity of Antimicrobials
  - 1.9.3. Dose Adjustment in Hepatic Insufficiency
- 1.10. Antibiotic Use in the Immunosuppressed: The New Paradigm
  - 1.10.1. Immune Response to Infection
  - 1.10.2. Main Opportunistic Germs in the Immunosuppressed
  - 1.10.3. Principles for the Choice and Duration of Antibiotic Therapy in the Immunosuppressed
- 1.11. Antibiotics in Pregnancy and Lactation: The Safety of their Use According to the Latest Scientific Findings
  - 1.11.1. The Passage of Antibiotics through the Placenta
  - 1.11.2. Antibiotics and Breast Milk
  - 1.11.3. Teratogenicity of Antibiotics



*A unique, key, and decisive training experience to boost your professional development"*

05

# Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

This teaching system is used in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.





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*Discover Re-learning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*



## At TECH we use the Case Method

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time

*With TECH you can experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching potential or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in professional medical practice

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*Did you know that this method was developed in 1912 at Harvard for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge
2. The learning process has a clear focus on practical skills that allow the student to better integrate into the real world
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course



## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases



*The physician will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University)

With this methodology we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years

*Re-learning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (we learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically

The overall score obtained by our learning system is 8.01, according to the highest international standards



In this program you will have access to the best educational material, prepared with you in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with



#### Latest Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want



#### Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story"



#### Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training







**Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding



**Testing & Re-testing**

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your goals



**Classes**

There is scientific evidence suggesting that observing third-party experts can be useful

Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning



# 06 Certificate

This Postgraduate Certificate in Advances in Antimicrobials guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Global University.





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*Successfully complete this training and receive your certificate without the hassle of travel or paperwork”*

This program will allow you to obtain your **Postgraduate Certificate in Advances in Antimicrobials** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra (**official bulletin**). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Advances in Antimicrobials**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





health future  
confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
online training  
development language  
virtual classroom



## Postgraduate Certificate Advances in Antimicrobials

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Certificate

## Advances in Antimicrobials

